Reference Manual

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Chapter 1: Introduction

1.1 WELCOME

Thank you for purchasing the StartREC 400, a breakthrough in CD-R duplication for audio professionals. The StartREC 400's advanced features include:

- Duplicate data or audio CDs (perfect for backing up hard disk recording system session files).
- Supports up to four 8X CD-R writers for blazingly fast speed — make four copies of a typical 60 minute CD in slightly over 8 minutes.
- Internal 6 Gigabyte hard disk with three partitions holds several projects simultaneously.
- Extract audio from CDs to the hard disk, then use editing features to rearrange, delete, combine, and index audio.
- Standalone operation eliminates problems of computer-based devices (operating systems not optimized for recording, limited analog and digital I/O, resource conflicts with other hardware, etc.).
- Accepts analog signals (balanced or unbalanced) and digital signals (SPDIF coax, SPDIF optical, and AES/EBU).
- High-quality 40X Plextor reader drive.
- Easy-to-understand operating system.
- Solid construction designed for consistent, day-in, day-out operation.

Thank you again for purchasing the finest standalone CD duplicator for audio professionals; we are sure you will find it a valuable partner in your work. For StartREC 400 news and updates, visit the Microboards web site at www.microboards.com.

1.2 PACKAGE CONTENTS

Your package contains:

- StartREC 400 unit
- Power cable
- User's manual
- Warranty card

1.3 CRUCIAL INFORMATION!

- The StartREC 400 works on 115 or 230V, as set by a small switch located above the rear panel power cable receptacle (see the rear panel view in section 1.7). *Before plugging in the unit, make sure this switch is set correctly for your line voltage.*
- StartREC 400 writes to CD-R media only, not CD-RW. However, it can copy most CD-RW discs.
- For 8X duplication, use only 8X-certified media. Microboards recommends Taiyo Yuden blank media.
- Interrupting power to the StartREC 400 while writing not only terminates the duplication process, but in extreme cases, can damage the unit. Consider investing in an uninterruptible power supply (UPS) to eliminate problems due to line voltage variations. A UPS designed for a large personal computer system can usually provide enough power to finish duplicating multiple CDs, even if a total blackout occurs during duplication. Suitable models cost around $100-$150 at office supply stores.
- Fill out and send in your warranty registration so we can notify you of StartREC 400 operating system updates.

1.4 SUPPORT

In the unusual event that you experience problems with the StartREC 400, Microboards is committed to insuring your satisfaction. Please contact us at:

(phone) 952/556-1614
(fax) 952/556-1620
(web) http://www.microboards.com
(mail) Microboards, 1721 Lake Drive West, Chanhassen, MN 55317

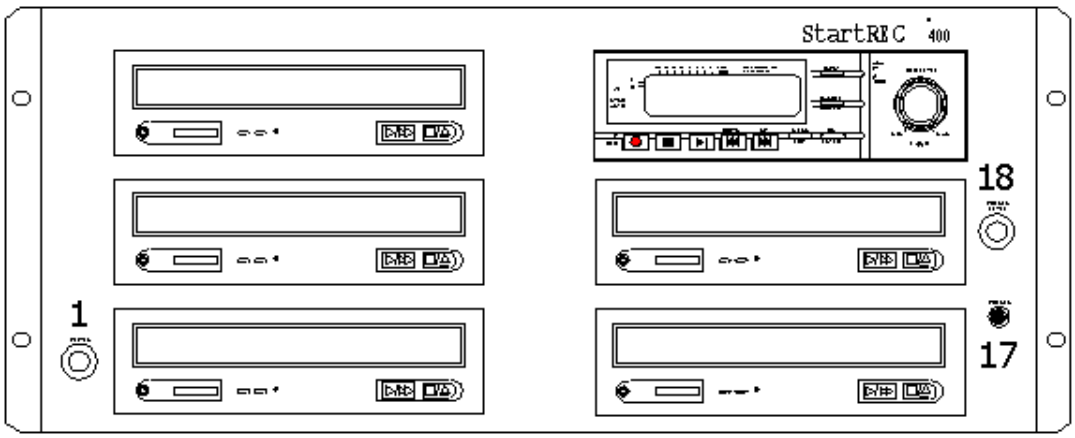
If calling, please have your StartREC 400 powered-up and near your phone to expedite the troubleshooting process.

1.5 CONVENTIONS

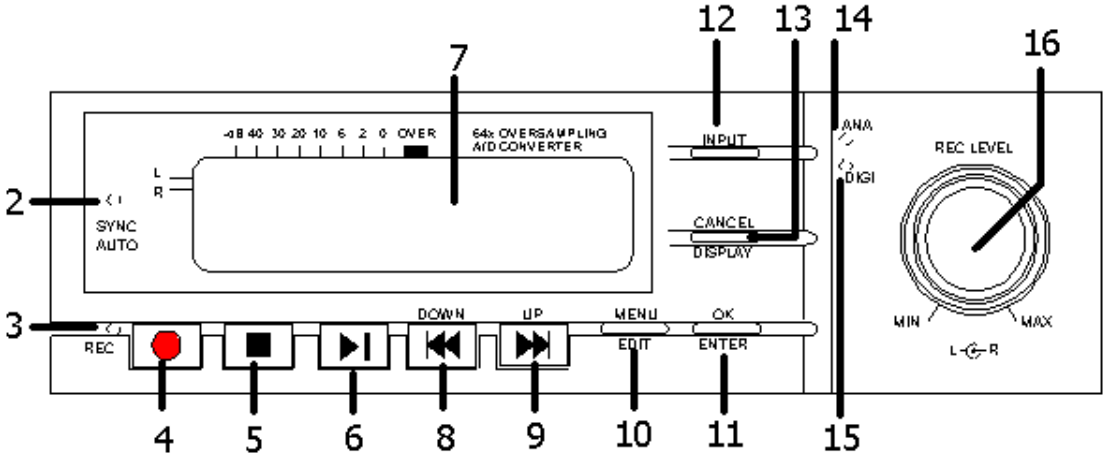
Please note the following conventions used in this manual:

HD = Hard disk
Block = A hard disk partition
Button names are indicated in upper/lower-case **Bold.**
Display prompts are shown in upper case ***BOLD ITALICS.***

1.6 NAMES AND FUNCTIONS



Front panel view



Display unit view

1 Power switch

Turns power on and off.

2 Sync Rec LED

The StartREC 400 can begin recording automatically (Auto Mark mode) upon receiving a signal at any digital input. It will also place an index marker at the beginning of the audio. The Sync Rec LED indicates that Auto Mark is active. If the LED is off, recording and marker placement is initiated manually.

3 Rec LED

This lights while the StartREC 400 is recording, and flashes in record pause mode.

4 Record switch

Places the StartREC 400 in Record Pause mode (record-ready).

5 Stop switch

Ends recording or playback.

6 Play/Pause switch

Press to play back the audio tracks recorded on the internal HD, or go from Record Pause to Record mode. Pressing this switch while playing back or recording pauses these processes. Pressing again while paused resumes playback or recording.

7 Display

This shows the StartREC 400's status, audio level meters, various menus, and other useful information.

8 Search/Rewind/Down

During playback, pressing this button *once* skips to the previous track. Pressing and holding this button "rewinds" through the track at about 6 times normal speed. When editing parameters, this button steps backward through functions and parameters.

9 Search/Forward/Up

During playback, pressing this button *once* skips ahead to the next track. Pressing and holding this button "fast forwards" through the track at about 6 times normal speed. When editing parameters, this button steps forward through functions and parameters.

10 Edit/Menu switch

Press this switch repeatedly to cycle through the three main, "top level" editing modes (Audio, Track Extraction, and Copy). While operating the StartREC 400, it is sometimes necessary to press this switch a few times to "back out" of the current level and return to the top level, or to select sub-menus (e.g., the Audio Setup menu when the StartREC 400 displays the main audio screen).

11 OK/Enter switch

Press this to enter parameter values into the StartREC's memory. For example, a menu may offer several possible values, as accessed with the Down/Up buttons. When the screen shows the desired value, press OK/Enter.

12 Input switch

While on the main audio screen, pressing Input repeatedly cycles through the various analog and digital input options.

13 Cancel/Display switch

This cancels out of a particular operation, and in other contexts, changes the display to a different operation or returns to the previous screen.

14 ANA(log) LED

Lights when the selected input signal is analog.

15 DIGI(tal) LED

Lights when the selected input signal is digital.

16 Rec Level control

Sets the recording level to obtain the maximum signal level short of distortion. This is a concentric control; the outer ring controls the left channel level, while the inner knob controls the right channel level. These can be adjusted independently to compensate for signal sources where the two channels are not evenly balanced.

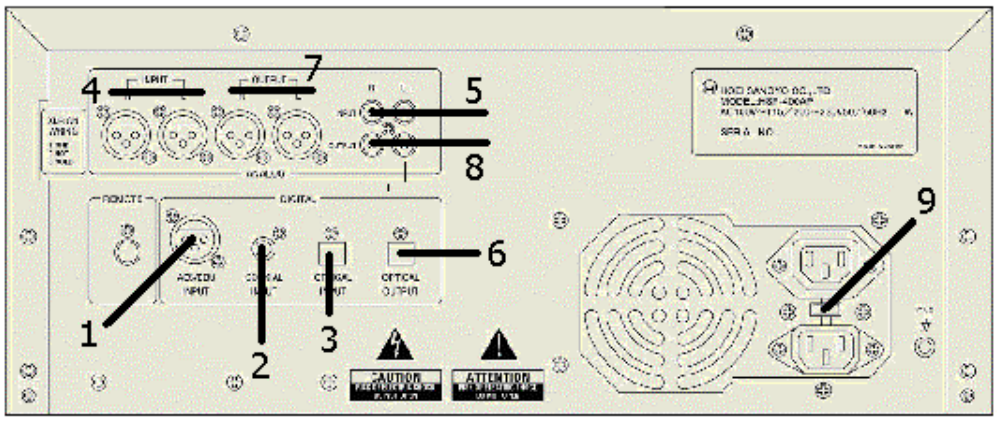
17 Phones Level control

You can monitor the HD audio; this control sets the level.

18 Phones jack

Plug in headphones here. Low-impedance headphones will give somewhat lower level than higher-impedance headphones.

1.7 REAR PANEL CONNECTORS



Rear panel view

The rear panel provides the following analog and digital audio inputs:

1 AES/EBU format digital audio (XLR connector)

2 Coaxial SPDIF format digital audio (RCA phono connector)

3 Optical SPDIF format digital audio (TOSLINK)

4 Balanced analog audio (XLR connectors)

5 Unbalanced analog audio (RCA phono connectors)

There are three audio outputs in addition to the headphones out mentioned previously:

6 Optical SPDIF format digital audio (TOSLINK)

7 Balanced analog audio (XLR connectors)

8 Unbalanced analog audio (RCA phono connectors)

The rear panel also includes AC power connectors and a voltage switch:

9 Voltage selector switch (115V/230V)

1.8 BASIC MENUS AND OPERATIONS

The StartREC 400 has three main menus that access all available operations:

- **Copy** This menu includes functions that copy data from the source CD (read-only) drive, or the internal HD, to the CD Recorder drives. Supported formats include standard audio Red Book, Windows data, Macintosh data, Multi-Session, etc. Optional verification/comparison is also available.

- **Audio** Sets parameters for recording analog or digital audio directly to the internal HD, as well as selecting various user options (whether to include SCMS, silence between cuts, track editing, play list etc.).

- **Track Extraction** Extracts audio tracks from the source CD drive to the internal HD or to CD Recorder drives.

Pressing the ***EDIT/MENU*** button advances to the next menu. When the display shows the desired menu, press **OK/Enter** to access the associated functions.

On power-up, the StartREC 400 defaults to whichever menu was last loaded.

1.9 BASIC MENU EXAMPLES

Copy Menu Example

This procedure steps you through copying a Master CD and making HD to CD copies

1. Power on the unit.
2. The Display will state ***Audio Menu***, ***Copy Menu*** or ***Trk Ext Menu***. Press the **Menu** button until the ***Copy Menu*** is displayed
3. Press the **OK / Enter** button to load the Copy Menu
4. Place the Master CD you with to copy into the Reader drive.
5. The display will state Copy Start? CD to CD
6. Place the blank CD-R discs into the CD-Recorder drives and close the trays.
7. Wait for the busy lights to go out on the CD-Recorder drives.
8. Press the **OK / Enter** button.
9. The master disc will be analyzed and the tracks will be copied to the CD-Recorder drives.
10. Once the recording is finished, the discs will eject from the CD-Recorder drives.

The same steps would be used to copy audio files from HD to CD. Use the following procedure to change the source from the CD Reader to the HD.

1. Power on the unit.
2. The Display will state Audio Menu, Copy Menu or Trk Ext Menu. Press the **Menu** button until the Copy Menu is displayed.
3. Press the **OK / Enter** button to load the Copy Menu
4. The display will read Copy Start? CD to CD
5. Press the **Cancel** button. The display will state Copy Change? Copy
6. Press the **Down** button. The display will state Mode Change? CD to CD
7. Press **OK / Enter**. The display will state CD to CD?
8. Press the **UP** button until the display reads HD(A) to CD.
9. Press **OK / Enter**. The display will state HD(A) to CD.
10. Press **Cancel**. The display will state Copy Start? HD(A) to CD.
11. Place blank CD-R discs into the CD-Recorder drives and close the trays.
12. Wait for the busy lights to go out on the CD-Recorder drives.
13. Press the **OK / Enter** button. The audio files on the HD will be copied to the CD-Recorder drives.
14. Once the copy is complete, the discs will eject from the CD-Recorder drives.

Audio Menu Example

This procedure steps you through recording audio from a DAT source to the Hard Drive
(This example connects the DAT to the StartREC with the Optical Connections)

1. Connect the DAT player to the StartREC using an Optical Digital Cable.
2. Power on the DAT player and the StartREC unit.
3. The Display will state ***Audio Menu***, ***Copy Menu*** or ***Trk Ext Menu***. Press the Menu button until the display states Audio Menu.
4. Press the **OK / Enter** button.
5. The display will state Audio? HD Block:A
6. Press **OK / Enter**. This will allow you to copy audio to Block A on the HD.
7. The display will state TOT 00 000:00. This indicates that there are no audio tracks on this block and the total time is zero.
8. The input selection must now be set. Press the **Input** button until the display reads Input : Digital Optical and then press **OK / Enter**
9. Check the Sync Auto selection by looking at the Sync Auto light on the left side of the display. If the light is off, the unit is in manual mode. If the light is on, the unit is in automatic mode. In auto mode, the Start ID's are automatically detected from the DAT tape. In manual mode, Start ID's will need to be put in manually after the audio is recorded to the HD.

10. To change this setting, press the **Menu** button. The display states: Set Up Menu? Cancel to Audio
11. Press **OK / Enter**. The display states HD Block Change? A: Free.
12. Press the **UP** button until the display states: REC Mode Change? Manual Mark.
13. Press the **OK / Enter** button. The display will state Auto Mark?
14. Press the **UP** button to choose between Auto and Manual Mark.
15. Once you decide which setting you wish to use, press **OK / Enter**. The display will state: REC Mode Change? Manual or Auto Mark
16. Press the **Cancel** button. The display will state Set Up Menu? Cancel to Audio
17. Press the **Cancel** button. The display will state TOT 00 000:00
18. Press the **REC** button. The display will show the Pause symbol blinking and it will show TRK 01.
19. Start your DAT player. If the REC Mode is set to Auto, the StartREC will automatically start recording. If the REC Mode is set to Manual, you must press the **Start** button on the StartREC to start recording.
20. To Stop the recording, press the **Stop** button. This can be done in either Auto or Manual mode. If you are in Auto mode and the DAT player stops playing, the recording will automatically stop.
21. Once the audio tracks are on the HD, you can make copies using the CD-Recorder drives in the Copy Menu, selecting HD to CD copy.

Track Extraction Sample

This procedure steps you through extracting audio files from a Master CD to the internal hard drive in the StartREC.

1. Power on the unit.
2. The Display will state ***Audio Menu***, ***Copy Menu*** or ***Trk Ext Menu***. Press the **Menu** button until the ***Trk Ext Menu*** is displayed
3. Press the **OK / Enter** button to load the Trk Ext Menu
4. Place the Master CD you with to extract audio from into the Reader drive.
5. The display will state Trk Extraction? CD to CD
6. Press the **Cancel** button. The display will read Mode Change? CD to CD
7. Press **OK / Enter**. The display will read CD to CD?
8. Press the **UP** button once. The display will read CD to HD(A).
9. Press **OK / Enter**. The display will read Mode Change? CD to HD(A).
10. Press **Cancel.** The display will read Trk Extraction? CD to HD(A).
11. Press **OK / Enter**. The display will then read Disc Analyze?
12. Press **OK / Enter**. The master disc will now be read.
13. The display will read Select Track and show the time for track one on the CD.
14. To select the tracks you want to move to the HD, press the **UP** and **DOWN** buttons to move between tracks.
15. Once on the track you want, press the **OK / Enter** button. A √ mark will appear next to the track number.
16. Using the **UP / DOWN** buttons, continue to select the other tracks you wish to extract.
17. Once all the tracks have been selected, press the **REC** button. The tracks will be copied from the CD to the HD
18. After the tracks have been copied, the Master CD will be ejected from the reader drive and the display will state EXIT?
19. If you wish to add tracks from another audio CD, press the **Cancel** button.
20. Place the Audio CD into the reader drive and close the tray.
21. Repeat steps 11 through 18.
22. If you are finished extracting audio to the HD, press the **OK / Enter** button.
23. At this time, you have the audio tracks on the HD and are ready to record the files to CD, using the Copy Menu.

Chapter 2: COPY MENU

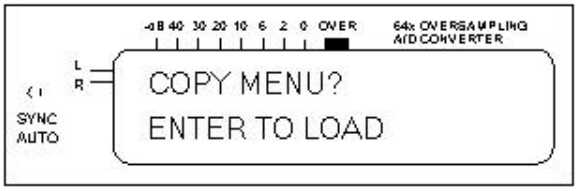
2.1 OVERVIEW

The Copy functions allow you to copy/verify data from your source (master) CD or the internal HD to recordable CD media, as well as copy data from your source CD to the internal HD. *The CD to be copied always inserts in the source drive.*

The Copy menu has two jobs:

- ***COPY START?*** This initiates the copy process. The display shows the copy source (CD or HD) and destination (CD or CD+HD).

- ***COPY CHANGE?*** This accesses copy function options. Pressing the **Down/Up** buttons cycles the display through various sub-menus.



To load the Copy functions, press **OK/Enter** at the ***COPY MENU?*** prompt. (To toggle among the Audio, Copy, and Track Extract menus, press the **Menu/Edit** button.)
To toggle between these jobs, press the **Cancel/Display** button.

2.2 MAKING CD COPIES

You will likely want to change some of the setup parameters (sections 2.3, 3.3, 4.5, and 5.1) before making any copies. Once everything is set up as desired, proceed with copying.

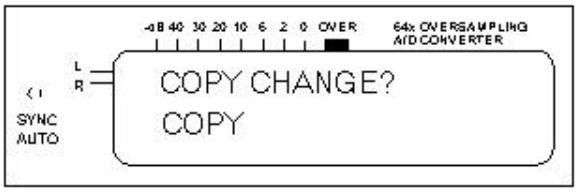
If you're not copying from HD, place the disk to be copied in the CD Master drive, and have at least one recordable CD in a target CD Recorder drive. The StartREC 400 must be pre-loaded with the appropriate discs to allow copying.

When the display says ***COPY START?***, press **OK/Enter** to initiate copying.

2.3 CHANGING COPY OPTIONS

Several sub-menus let you change copy parameters. To access these from the ***COPY MENU?*** prompt:

1. Press **Cancel/Display** until the display shows ***COPY CHANGE?***

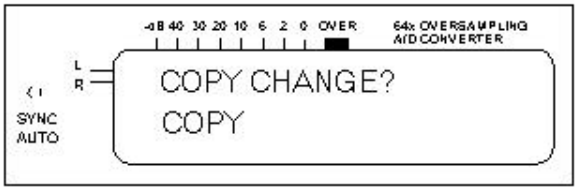


2. Use the **Down/Up** buttons to cycle through sub-menus that contain various parameters.
3. When the display shows the sub-menu whose parameters you want to modify, press **OK/Enter.** (To return to a previous display, press **Cancel/Display.)**
4. Use the **Down/Up** buttons to choose the desired parameter value.
5. Press **OK/Enter** to enter the changed parameter in the StartREC 400's memory. Altered settings are retained indefinitely unless you change them again, or load new firmware.

Following is a list of sub-menus and their parameters.

2.3.1 COPY CHANGE

This determines whether the StartREC 400 will copy, verify, or both. After pressing **OK/Enter** at the ***COPY CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.



Note that the StartREC 400 can also verify, or copy + verify, CDs using the CD-DA format. However, audio data entering the system via the Audio menu changes the CD's TOC, so that it cannot be verified against the original audio data.

- ***COPY?*** Copies HD/CD source material to CD Recorder drives, or source CD material to HD.
- ***VERIFY?*** Compares the contents of source and target material to make sure the copies are bit-for-bit accurate.
- ***COPY+VERIFY?*** Copies as with the standard Copy function, then verifies as with the standard Verify option.

2.3.2 HD BLOCK CHANGE

The StartREC 400's internal HD has three different storage Blocks (partitions): A, B, and C. Select the Block containing the data you want to copy to CDs, or to which you want to write data from CD or the audio inputs.

After pressing **OK/Enter** at the ***HD BLOCK CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.

- ***A?*** Chooses Block A
- ***B?*** Chooses Block B
- ***C?*** Chooses Block C

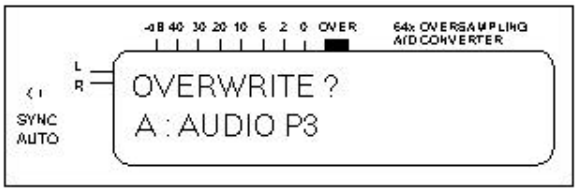
For each option, the display's bottom line shows one of the following status indications:

- ***FREE*** There is no data in the Block.
- ***AUDIO*** There is audio data in the Block. Also shows ***P(#),*** where # is the number of tracks.
- ***DATA*** There is non-audio data in the Block.

If the target Block shows ***FREE,*** press **OK/Enter**. That block becomes the target for copies.

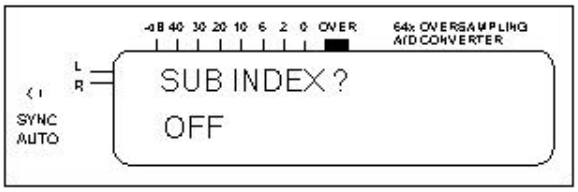
If you press **OK/Enter** and ***OVERWRITE?*** appears, there is already data in the target Block. Either choose a different, free Block, or erase data in the current Block so it can be overwritten with new data. To do this:

1. When the display shows ***OVERWRITE,*** press **OK/Enter**.
2. Existing data is erased, and the Block is free for recording.



CAUTION: Selecting ***OVERWRITE*** erases all data within that Block. *This data cannot be recovered!* Make sure you copy the Block data to at least one CD if you will need to use this data later. The data in other Blocks remains intact.

2.3.3 SUB INDEX

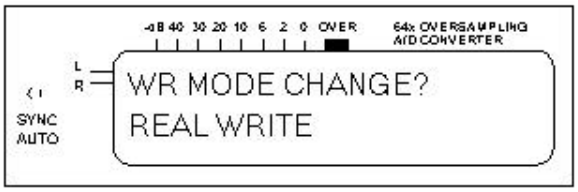


After pressing **OK/Enter** at the ***SUB INDEX?*** prompt, select from the following options with the **Down/Up** buttons.

- ***ON?*** Copies Sub Index information from the source CD to target CD(s). The StartREC 400 reads the source CD to detect Sub Index data; the more Sub Index data, the longer it takes to read.
- ***OFF?*** Copies without Sub Index information, even if the source CD has Sub Index data.

Note: This function is relevant only if the master data source contains sub index data. The StartREC 400 does not create sub indices with this function.

2.3.4 WR(ITE) MODE CHANGE

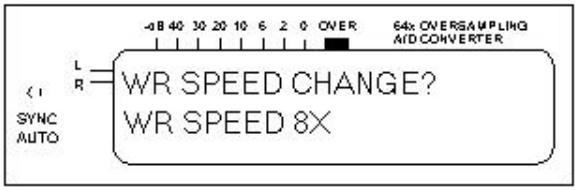


After pressing **OK/Enter** at the ***WR MODE CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.

- ***TEST WRITE?*** Performs a copy *without* turning on the CD Recorder drive's laser, so that the blank media remains blank. Use this mode to test whether a CD can be duplicated without problems. Verification is not available in this mode, because no data is written to the target CD that can be verified.
- ***REAL WRITE?*** Copies with the laser turned on, creating useable copies.

2.3.5 WR(ITE) SPEED CHANGE

StartREC accepts CD Recorder drives with up to 8X speed, and can write at 8X, 4X, 2X, and 1X speeds. Faster speeds allow for quicker duplication, but may be more prone to errors. *At faster speeds, use blank CD media certified for 8X operation.* For most standard recordable CDs, writing at 2X or 1X produces the fewest errors. Note that not all speeds may be available, depending on the CD Recorder drives installed in the StartREC 400.

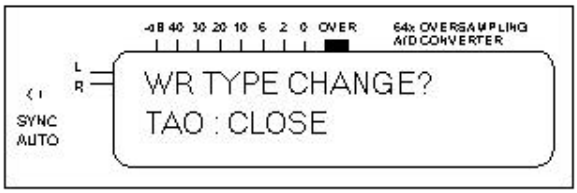


After pressing **OK/Enter** at the ***WR SPEED CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.

- ***WRITE SPEED x8?*** Writes data eight times as fast as real time (e.g., duplicating a 60 minute audio CD takes approximately 7.5 minutes).
- ***WRITE SPEED x4?*** Writes data four times as fast as real time (e.g., duplicating a 60 minute audio CD takes approximately 15 minutes).
- ***WRITE SPEED x2?*** Writes data twice as fast as real time (e.g., duplicating a 60 minute audio CD takes approximately 30 minutes).
- ***WRITE SPEED x1?*** Writes data in real time (e.g., duplicating a 60 minute audio CD takes approximately 60 minutes).

2.3.6 WR(ITE) TYPE CHANGE

Although the StartREC400 cannot add sessions to target media (all target media must be blank CDs), it can duplicate discs that are left open so that more tracks can be added later. For example, suppose you produce a CD-ROM that is left open, so that tracks can be added later using a personal computer's CD recording program. StartREC can copy the CD-ROM and leave the copy open. This sub-menu chooses whether a duplicated CD will be left open or closed.



After pressing **OK/Enter** at the ***WR TYPE CHANGE?*** prompt, select from one of the following four options with the **Down/Up** buttons.

- ***SAO:CLOSE?*** SAO (Session At Once) is used mostly when copying data CDs. This option copies in the SAO format, then closes the CD so that no further data can be added.
- ***SAO:OPEN?*** This copies in the SAO format, but leaves the CD open so that further data can be added using appropriate CD recording programs (e.g. Adaptec's EZ -CD Creator).
- ***TAO:CLOSE?*** Track At Once (TAO) is used mostly when copying audio CDs. This option copies in the TAO format, then closes any copies so no more tracks can be added. This creates a standard Red Book audio CD that plays back on any CD player.

- ***TAO:OPEN?*** This copies in the TAO format, but leaves the CD open so that further data can be added using appropriate CD recording programs (e.g. Adaptec's EZ -CD Creator). This option is generally intended for situations where you know the source CD was recorded in TAO format, as often occurs when a CD consists of cuts played into a stand-alone audio CD recorder from DAT. Caution: This does not produce a standard Red Book CD, and will generally not play over standard audio compact disc players.

Note: When copying from the internal HD, the Write Type cannot be changed, no matter how you edit the above settings. The Write Type will always be the same as the data stored on the HD.

2.3.7 FORMAT CHANGE

The StartREC 400 detects CD formats automatically, except for CD-G. Specify this format manually at the ***FORMAT CHANGE?*** prompt. If a format is not supported, the display shows ***UNKNOWN FORMAT.***

To accommodate CD-G, after pressing **OK/Enter** at the ***FORMAT CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.

- ***AUTO FORMAT?*** This default mode supports all recognized formats.
- ***CD-G FORMAT?*** Select this if the CD to be copied uses the CD-G format.

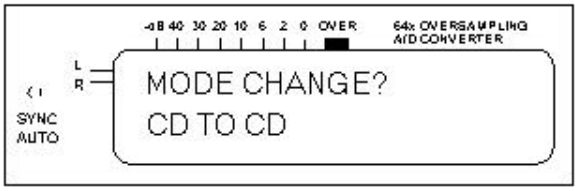
Note: The StartREC 400 defines CD-EXTRA and ENHANCED-CD formats as:

- 1st track = CD-DA
- 2nd track = CD-ROM XA

If your CD-EXTRA/ENHANCED-CD differs, it will be copied using the Multi-Session format.

2.3.8 MODE CHANGE

This defines the copy source and destination. After pressing **OK/Enter** at the ***MODE CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.



- ***COPY?*** Copies from the source CD to the CD Recorder drive(s).
- ***CD TO HD/CD?*** Copies from the source CD to the CD Recorder drives(s) and the HD. Note that the StartREC 400 can record to a maximum of 4 devices, including the HD, at 8X writing speed.
- ***CD TO HD?*** Copies from the source CD to one of the internal HD's Blocks (chosen previously; see section 2.3.2).
- ***HD TO CD?*** Copies from one of the internal HD's Blocks (chosen previously; see section 2.3.2) to the CD Recorder drive(s).
- ***Program List?*** Copies audio files that are located on the Program List to the CD Recorder drives(s). Available only when the Program List is set to on. Selecting Program List as the mode, the copy menu will display Copy Start? Program List. With CD-R discs loaded in the CD Recorder drive(s), pressing Enter will copy the Program List from the internal hard drive.

Chapter 3: TRACK EXTRACTION MENU

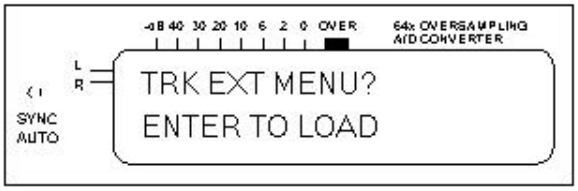
3.1 OVERVEW

Track Extraction is similar to duplication, but instead of copying an entire CD or HD Block, this function extracts individual audio tracks from CD. You can extract (copy) them to the internal HD in Disc At Once mode, or to recordable CD drive(s) in Track at Once mode.

When extracting to recordable CDs, the CD is left open so it is possible to add more tracks. This CD is not Red Book compatible and therefore cannot play over standard CD players. To create a Red Book CD, extract the tracks to HD first, then transfer the contents of the HD Block to a recordable CD, using the HD to CD copy function (section 2.3.8) and the TAO:Close protocol (described in section 2.3.6).

Note that although you can copy multiple, different tracks during a Track Extraction session, exiting the session automatically fixes the CD and no more tracks can be added. This is true even if you remove the CD, and use it in a computer with software designed for multi-session writing. Also note that there is no test function available in the extraction menu.

To load the Track Extraction functions, press **OK/Enter** at the ***TRK EXT MENU?*** prompt. (To toggle among the Audio, Copy, and Track Extract menus, press the **Menu/Edit** button.)

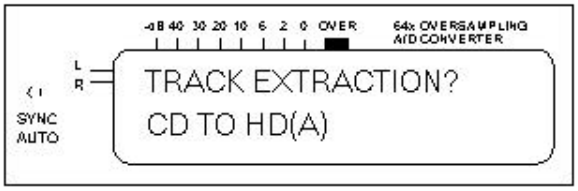


3.2 TRACK EXTRACTION JOBS

The Track Extraction menu has two jobs:

- ***TRK EXTRACTION?*** This initiates the extraction process. The display initially shows the copy source (CD) and destination (CD or HD), then shows extraction progress until extraction is complete.
- ***MODE CHANGE?*** This presents different extraction options. Pressing the **Down/Up** buttons cycles through various sub-menus, as shown in the display.

To load the Mode Change functions, press **OK/Enter** at the ***TRK EXT?*** prompt. To toggle between the two jobs, press the **Cancel/Display** button.



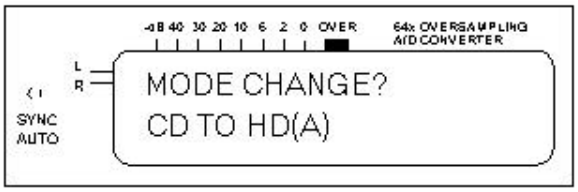
3.3 CHANGING EXTRACTION OPTIONS

To access the track extraction sub-menus:

1. Press **Cancel/Display** until the display shows ***MODE CHANGE?***
2. Use the **Down/Up** buttons to cycle through sub-menus that contain various parameters.
3. When the display shows the sub-menu whoseparameters you want to modify, press **OK/Enter.** (To return to a previous display, press **Cancel/Display.)**
4. Use the **Down/Up** buttons to choose the desired parameter value.
5. Press **OK/Enter** to enter the changed parameter in the StartREC 400's memory. Changed settings are retained indefinitely unless you change them again, or load new firmware.

Following is a list of sub-menus and their parameters.

3.3.1 MODE CHANGE



This defines the copy destination (the extraction source is always the source CD drive). After pressing **OK/Enter** at the ***MODE CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.

- ***CD TO CD?*** Extracts from the source CD drive to the CD Recorder(s).
- ***CD TO HD?*** Extracts from the source CD drive to one of the internal HD's Blocks (chosen previously; see section 3.3.2).

3.3.2 HD BLOCK CHANGE

The StartREC 400's internal Hard Drive (HD) has three different storage Blocks (partitions): A, B, and C. Select the Block where you want to copy the extracted CD data.

After pressing **OK/Enter** at the HD Block Change prompt, select from the following options with the **Down/Up** buttons.

- ***A?*** Chooses Block A
- ***B?*** Chooses Block B
- ***C?*** Chooses Block C

For each option, the display's bottom line shows one of the following status indications:

- ***FREE*** There is no data in the Block.
- ***AUDIO*** There is audio data in the Block. Also shows ***P(#),*** where # is the number of tracks.
- ***DATA*** There is non-audio data in the Block.

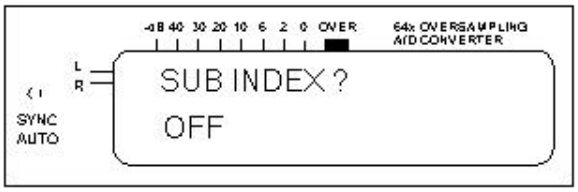
If the target Block shows ***FREE,*** press **OK/Enter**. That block becomes the target for copies.

If you press **OK/Enter** and ***OVERWRITE?*** appears, there is already data in the target Block. Either choose a different, free Block, or erase data in the current Block so it can be overwritten with new data. To do this:

3. When the display shows ***OVERWRITE,*** press **OK/Enter**.
4. Existing data is erased, and the Block is free for recording.

CAUTION: Selecting ***OVERWRITE*** erases all data within that Block. *This data cannot be recovered!* Make sure you copy the Block data to at least one CD if you will need to use this data later. The data in other Blocks remains intact.

3.3.3 SUB INDEX



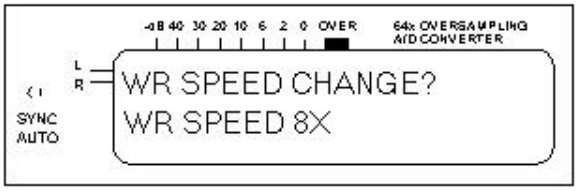
After pressing **OK/Enter** at the ***SUB INDEX?*** prompt, select from the following options with the **Down/Up** buttons.

- ***ON?*** Extracts Sub Index information from the source CD to target CD(s). The StartREC 400 reads the source CD to detect Sub Index data; the more Sub Index data, the longer it takes to read.
- ***OFF?*** Copies without Sub Index information, even if the source CD has Sub Index data.

3.3.4 WR(ITE) SPEED CHANGE

StartREC accepts CD Recorder drives with up to 8X speed, and can write at 8X, 4X, 2X, and 1X speeds. Faster speeds allow for quicker duplication, but can be more prone to errors. (This applies only when writing to CD, not HD. For HD, you can always select the fastest possible speed.)

At faster speeds, use blank CD media certified for 8X operation. For most standard CDs, writing at 2X or 1X produces the fewest errors. Note that not all speeds may be available, depending on the CD Recorder drives installed in the StartREC 400.

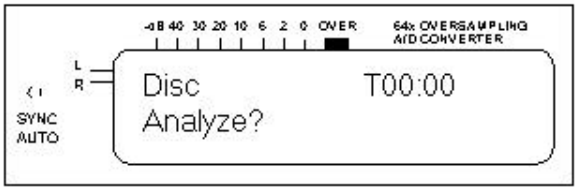


After pressing **OK/Enter** at the ***WR SPEED CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.

- ***WRITE SPEED x1?*** Writes data in real time (e.g., extracting and copying a 2 minute CD track takes approximately 2 minutes).
- ***WRITE SPEED x2?*** Writes data twice as fast as real time (e.g., extracting and copying a 2 minute CD track takes approximately 1 minute).
- ***WRITE SPEED x4?*** Writes data four times as fast as real time (e.g, extracting and copying a 2 minute CD track takes approximately 30 seconds).
- ***WRITE SPEED x8?*** Writes data eight times as fast as real time (e.g., extracting and copying a 2 minute CD track takes approximately 15 seconds).

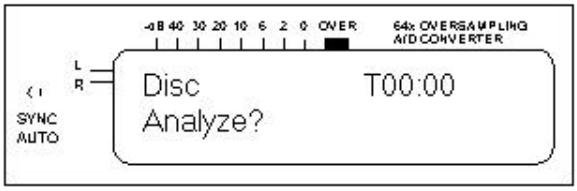
3.4 HOW TO EXTRACT AND COPY TRACKS

- Insert the CD with tracks to be extracted into the source CD drive. If you are extracting to CD, insert the blank, recordable CD(s) into the CD Recording drive(s).
- If the Track Extraction menu is not the current menu, press **Menu/Edit** until the display shows ***TRK EXT MENU?,*** then press **OK/Enter.**
- Set up the desired extraction parameters, as detailed above in section 3.3..
- Press **Cancel/Display** until the display shows ***TRK EXTRACTION?***
- Press **OK/Enter.** The display shows ***DISC ANALYZE?***

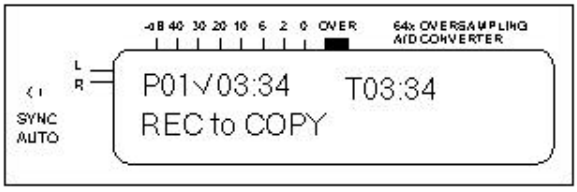


- Press **OK/Enter.**
- StartREC 400 now analyzes the source CD. This may take a few seconds.
- The Select Track display appears. The top line shows the track number, total track time, and cumulative time of all selected tracks (this initially reads T00:00).

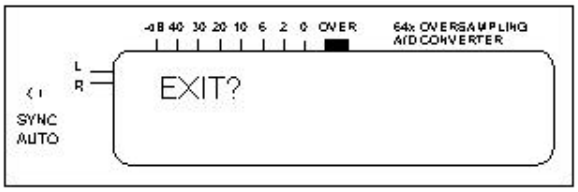
CAUTION: Make sure the cumulative time does not exceed the target media's capacity.



- Use the **Down/Up** buttons to scroll through the CD tracks. To select a track for extraction, press **OK/Enter.** A mark appears between the track number and track time. You can select as many tracks as desired. To de-select a previously-selected track, scroll with the **Down/Up** buttons to the track to be de-selected, and press the **OK/Enter** button.



- After selecting all desired tracks for extraction, press the **Rec** button.
- The display shows the copy progress, as a percentage of material copied.
- When extraction is complete, the display shows ***EXIT?*** and the CD Master tray opens automatically. Press **OK/Enter** to exit the menu; this closes the session, the display shows ***FIXING!,*** and no more tracks can be added to the target CD. If you want to add more tracks, insert another CD with tracks to be extracted, then press **Cancel/Display** and use the same extraction procedure described above.



Note 1: You cannot extract more than 99 audio tracks. All audio CDs are limited to a total of 99 tracks.
Note 2: The StartREC 400 compares the target media's capacity with the total time for the selected tracks. If you mix media with different capacities (e.g., 74 and 80 minute recordable CDs), StartREC will write only as much data as the lowest-capacity media can accommodate. Microboards recommends using the same media when duplicating.

Chapter 4: AUDIO MENU

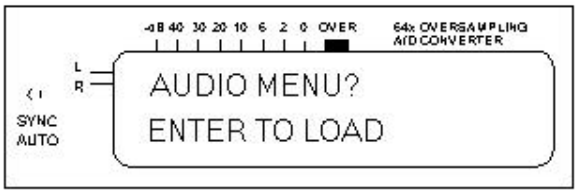
4.1 OVERVIEW

The StartREC 400 accepts the following types of audio signal, and sends them to the internal HD:

- AES/EBU format digital audio (XLR connector)
- Coaxial SPDIF format digital audio, including Minidisc (RCA phono connector)
- Optical SPDIF format digital audio, including Minidisc (TOSLINK)
- Balanced analog audio (XLR connectors)
- Unbalanced analog audio (RCA phono connectors)

There are also four outputs:

- Optical SPDIF format digital audio (TOSLINK)
- Balanced analog audio (XLR connectors)
- Unbalanced analog audio (RCA phono connectors)
- Headphones (1/4" stereo jack)



To toggle among the various menus (Audio, Copy, and Track Extract), press the **Menu/Edit** button. To load the Audio functions, press **OK/Enter** at the ***AUDIO MENU?*** prompt. Note that the digital outputs are active when recording, so you can send the signal to other digital recording devices, such as DAT.

4.2 GENERAL INFORMATION

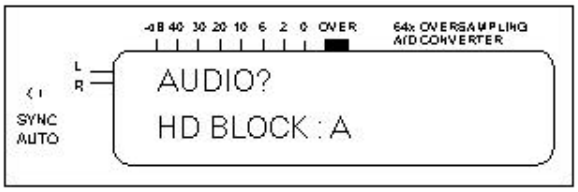
Please note the following about recording audio.

- Turn off the StartREC 400, and all devices connected to the StartREC 400 (monitoring system, audio source, etc.), before patching them together.
- Never turn off the StartREC 400 while it is recording. Microboards strongly recommends purchasing an uninterruptible power supply to insure a consistent flow of power to the StartREC 400.
- You cannot record more than 99 tracks, the maximum allowed by the Red Book CD specification. However, you can use the Combine function to combine tracks, thereby reducing the number of tracks.
- Tracks less than 4 seconds cannot be recorded.
- If duplicating a commercial CD, please respect the copyright laws and set the SCMS (Serial Copy Management System) to Prohibit, to discourage unauthorized digital duplication. *Do not duplicate copyrighted material, except with prior written permission of the copyright holders.*
- Record only to CD-R media. The StartREC 400 is not designed to record to CD-RW media.
- CD-Rs must be blank. The StartREC 400 cannot add data to a previously-recorded CD-R.
- If you use a source taken via the Copy or Track Extraction menu in the Audio menu, the StartREC 400 edits its TOC (Table of Contents) to make using the Audio menu possible. This will be a different TOC compared to the original source.

4.3 AUDIO MENU JOBS

The Audio menu has two jobs:

- ***AUDIO?*** This accesses menus involved in the recording process. The display also shows the destination hard disk Block (A, B, or C) into which audio will be recorded.



- ***HD BLOCK CHANGE?*** This selects the HD Block into which audio will be recorded.

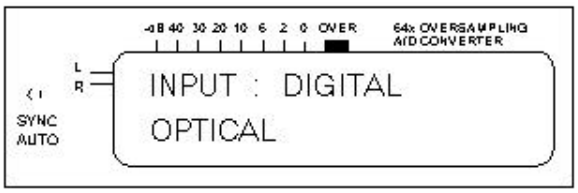
To load the HD Block Change functions:

- At the ***HD BLOCK CHANGE?*** Prompt, press **OK/Enter.**
- Use the **Down/Up** buttons to select a free Block for recording.
- If a Block is not free, overwrite the data with the Erase All function (section 4.5.2).
- When the display shows the desired Block for recording, press **OK/Enter.**

4.4 SELECTING THE INPUT FOR RECORDING

1. Press **OK/Enter** at the ***AUDIO?*** Prompt to access the main audio screen, which shows the track number and total recorded time. Initially this will show ***T00 000:00.***
2. Each press of the **Input** switch cycles through the available audio inputs:

- AES/EBU format digital audio (XLR connector)
- Coaxial SPDIF format digital audio (RCA phono connector)
- Optical SPDIF format digital audio (TOSLINK)
- Balanced analog audio (XLR connectors)
- Unbalanced analog audio (RCA phono connectors)

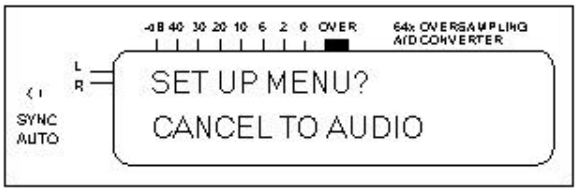


3. With a digital source selected, the green DIGI LED next to the Rec Level control lights. With an analog source selected, the red ANA LED next to the Rec Level control lights. Use the rotary volume control to set analog levels so that the meter's "over" segment never lights.
4. After selecting the desired input, press **OK/Enter** to return to the main audio screen, or simply wait. The input selection screen will revert automatically to the main audio screen after a few seconds.

4.5 CHANGING AUDIO SETUP OPTIONS

Several sub-menus let you set up various parameters for audio recording. To access these:

1. From the main audio screen (accessed as described in sections 4.3 and 4.4), press **Menu/Edit**
2. The screen shows ***SET UP MENU?***



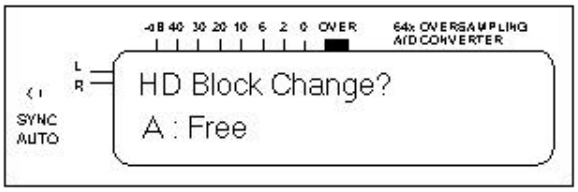
3. Press **OK/Enter** to load the setup functions (or **Cancel/Display** to return to the main audio screen).
4. Use the **Down/Up** buttons to cycle through sub-menus that contain various parameters.
5. When the display shows the sub-menu whose parameters you want to modify, press **OK/Enter.** (To return to the ***SET UP MENU?*** screen, press **Cancel/Display**.)
6. Use the **Down/Up** buttons to choose the desired parameter value.
7. Press **OK/Enter** to enter the changed parameter in the StartREC 400's memory. Note that any settings you change are retained indefinitely unless you change them again, or load new firmware.

Following is a list of sub-menus and their available parameters.

4.5.1 HD BLOCK CHANGE

The StartREC 400's internal HD has three different storage Blocks (partitions): A, B, and C. Select the Block where you want to record audio.

After pressing **OK/Enter** at the ***HD BLOCK CHANGE?*** prompt, select from the following options with the **Down/Up** buttons.



- ***A?*** Chooses Block A
- ***B?*** Chooses Block B
- ***C?*** Chooses Block C
- ***Program List?*** Chooses the Program List (Available only with the Play List turned on)

For each option, the display's bottom line shows one of the following status indications:

- ***FREE*** There is no data in the Block.
- ***AUDIO*** There is audio data in the Block. Also shows ***P(#),*** where # is the number of tracks.
- ***DATA*** There is non-audio data in the Block.

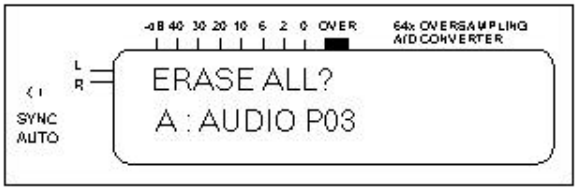
To erase data in a Block so it can be overwritten with new data, see the Erase All function (section 4.5.2).

4.5.2 ERASE ALL

You can erase any of the HD Blocks in order to write more data to the Block. If a Block indicates Free, it cannot be erased because there is nothing to erase.

CAUTION: Selecting ***OVERWRITE*** erases all data within that Block. *This data cannot be recovered!* Make sure you copy the Block data to at least one CD if you will need to use this data later. The data in other Blocks remains intact.

1. At the ***ERASE ALL?*** screen, press **OK/Enter**.
2. Choose the desired Block with the **Down/Up** buttons.
3. Press **OK/Enter** to erase the Block. You will not be asked "Sure?" Complete this step only if you are certain you want to erase all data in the specified Block.



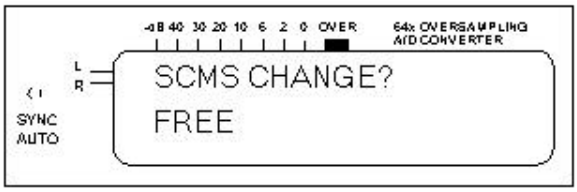
4.5.3 SCMS CHANGE

Note: This function is not available in firmware versions 1.00b or below. Please check with Microboards for upgrade availability.

The StartREC 400 ignores SCMS (Serial Copy Management System) data from the source material so that you can apply one of three levels of copy protection to the target CD(s).

1. At the ***SCMS CHANGE?*** screen, press **OK/Enter**.
2. Use the **Down/Up** buttons to select one of the following levels of protection:

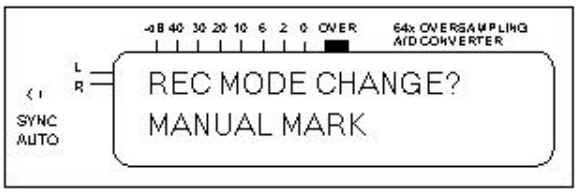
- ***FREE*** The target disc allows unlimited digital duplication.
- ***PROHIBIT*** The target disk cannot be duplicated digitally.



4.5.4 REC MODE CHANGE

This menu determines whether track markers will be inserted manually or automatically.

1. At the ***REC MODE CHANGE?*** screen, press **OK/Enter.**
2. Choose between ***AUTO MARK*** or ***MANUAL MARK*** with the **Down/Up** buttons.
3. Press **OK/Enter.** The display reverts to the ***REC MODE CHANGE?*** screen.

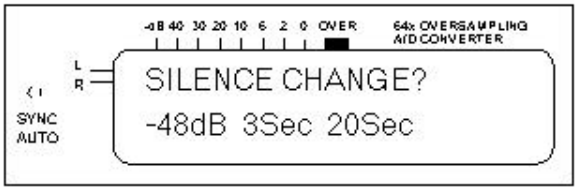


4.5.5 SILENCE CHANGE

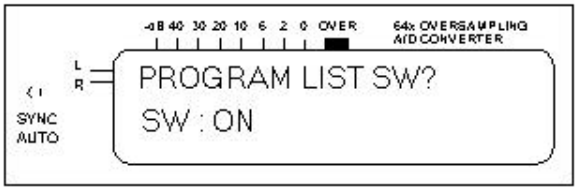
The StartREC 400 can automatically insert a track marker if the level drops below a certain level for a specified period of time, and ends recording if silence exists for more than a certain amount of time. (Track markers can also be set manually; see the Rec Mode Change menu, described in section 4.5.4, to determine whether track marking is automatic or manual.)

In automatic track mark mode, the default silence to create a track requires a signal softer than -34 dB for 3 seconds (3 seconds is the normal time between tracks for conventional CDs), but you have several other options. To access these:

1. At ***SILENCE CHANGE?*** (the lower line shows the existing silence settings), press **OK/Enter.**
2. At the ***LEVEL?*** screen, choose the desired level (-36, -39, -42, or -48 dB) with the **Down/Up** buttons, then press **OK/Enter.**
3. The screen now shows ***LENGTH?*** Choose the desired length (3, 4, 5, 6, 7, 8, or 9 seconds) with the **Down/Up** buttons, then press **OK/Enter.**
4. The screen now shows ***END TIME?*** Use the **Down/Up** buttons to select among OFF, 10, 20, 30, and 60 seconds.
5. Press **OK/Enter,** and the display reverts to the main ***SILENCE CHANGE?*** screen.

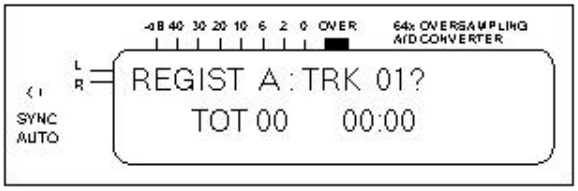


4.5.6 PROGRAM LIST FEATURE

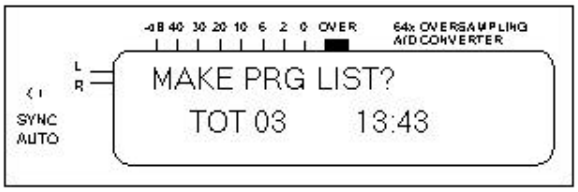


This menu enables or disables the StartREC Program List feature. SW:ON enables the Program List. SW:OFF disables Program List. Enabling the Program List allows the user to select audio files from Blocks A, B or C and move them to the Program List block. To move files to the Program List:

1. With the Program List set to SW: ON, enter the HDD block where the audio files are located.
2. Using the **Down/Up** buttons, go to the track you wish to place in the Program List
3. Press the **Play/Pause** button to start playing the audio file.
4. Press the **Play/Pause** button to pause the playback
5. Press the **Menu** button and the screen will display REGIST? TOT xx XX:XX, where xx shows the total number of tracks currently in the Program List and XX:XX shows total playing time of the tracks in the Program List.



6. Press **Enter** to add the track to the Program List. Pressing **Cancel** will bring you back to the paused audio track.
7. Once all the tracks are added to the Program List, press the **Menu** button twice. The screen will display MAKE PROGRAM LIST? TOT xx XX:XX, with xx being the total number of tracks in the Program List and XX:XX showing the total playing time of the tracks on the Program List.



8. Press **Enter** to make the Program List. The Program List will be produced on the internal hard drive.

4.6 PLAY AND RECORD TIME DISPLAYS

While playing back, pressing **Cancel/Display** toggles the display among the following options:

- ***TRK XX mmm:ss*** The track's elapsed time
- ***TRK XX –mmm:ss*** Remaining track time
- ***TOT mmm:ss*** Elapsed time for all tracks played so far
- ***TOT -mmm:ss*** Total remaining time (all tracks)
- ***TOT XX mmm:ss*** Total time of all tracks (this does not vary while playing)
- ***REM mmm:ss*** Remaining Block capacity

While recording, pressing **Cancel/Display** toggles the display among the following options:

- ***TRK XX mmm:ss*** The recorded track's elapsed time
- ***TRK XX –mmm:ss*** The remaining time for the recorded track
- ***TOT mmm:ss*** Elapsed time for all tracks recorded so far
- ***REM mmm:ss*** Remaining Block capacity

CAUTION: When recording, pressing **Cancel/Display** after the REM display will end recording, and update the Table of Contents.

Chapter 5: EDIT MENU

5.1 CHANGING EDIT OPTIONS

There are several sub-menus that let you edit the audio sources in the HD Block. To access these, you must be at the main audio screen that shows the selected track and times (sections 4.3 and 4.4), and have selected the track you want to edit and the Program List Switch must be set to OFF. Then, do the following:

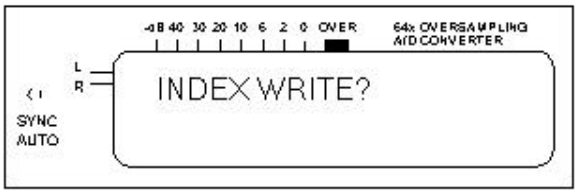
1. Press Play, then Pause, to enter track pause mode.
2. While paused, press **Menu/Edit.**
3. The screen show ***INDEX WRITE?,*** the first edit menu.
4. Use the **Down/Up** buttons to cycle through the sub-menus that contain various edit options.
5. When the display shows the sub-menu with the desired edit menu, press **OK/Enter.** (To return the previous screen, press **Cancel/Display**.)
6. Press **OK/Enter** to enter the changed edit menu parameter in the StartREC 400's memory.

Following is a list of edit sub-menus and their available parameters. These menus are available with the Play List set to OFF.

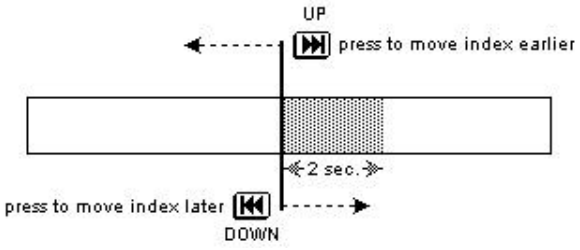
5.1.1 INDEX WRITE

You can divide one track into two by inserting a new index mark at the split point. Before entering into the Edit menu section, select where you want to write the Index mark. For example, to place an index mark in the middle of a long track, play up to that point, or press and hold the >>| and |<< buttons to fast forward or rewind respectively to the point where you want to write the index point. Then press **Pause.**

Note that index markers must be separated by more than 4 seconds.

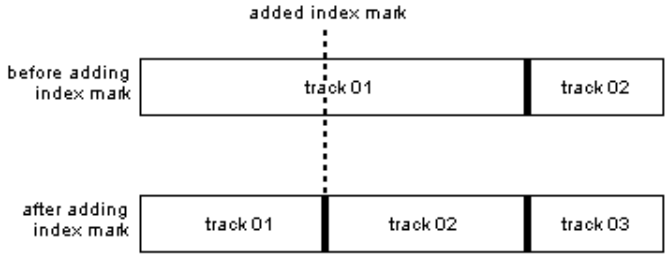


1. At the ***INDEX WRITE?*** Screen, press **OK/Enter.**
2. The ***TRACK?*** prompt appears.
3. Press **OK/Enter.** A sample of the audio will play, starting with where the index point will be entered, and playing for two seconds past that point. To move the index point earlier, press the **Up** button repeatedly until the audio sample plays back from the desired point. To move the index point later, similarly press the **Down** button. The following diagram shows graphically how to edit the index point.



4. Press **Cancel/Display** if you want to cancel the index marking process.
5. If you do not press the **Down** or **Up** button during six "loops" of the two-second audio segment, the index marker will be written automatically. You may also press **OK/Enter** at any time to enter the index marker immediately.

The following diagram shows how adding an index mark within a track splits it into two new tracks. The track immediately before the index mark retains the original track's ID number; the track that follows the index marker is now the original track ID+1, and subsequent tracks are also renumbered (incremented by +1).

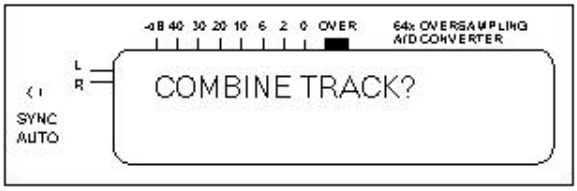


5.1.2 COMBINE TRACK

You can combine two consecutive tracks into one track, with the combined track taking on the first track's number. For example, combining tracks 03 and 04 creates a new track 03.

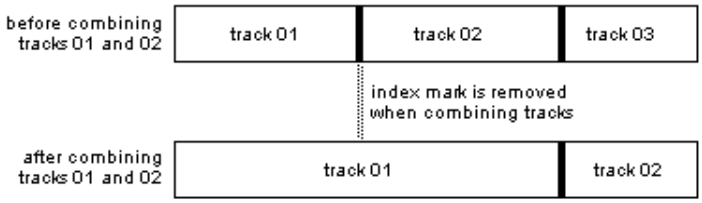
Note: Non-consecutive tracks cannot be combined unless you first move one or both of the tracks (section 5.1.3) so that they are consecutive.

Note: If your copied CD has too many index marks (exceeding the maximum of 99 allowed by the Red Book CD standard), use the Combine function to combine tracks and reduce the number of index marks.



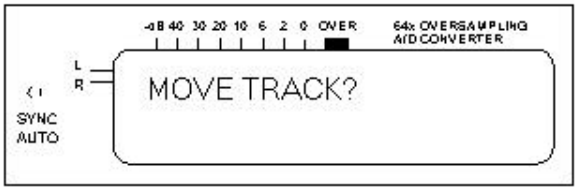
1. At the ***COMBINE TRACK?*** Prompt, press **OK/Enter.**
2. The display shows ***Tr XX+YY?,*** where XX is the track currently in pause mode, and YY is the next higher-numbered track. If this is correct, press **OK/Enter.** The two tracks are combined, and subsequent tracks are renumbered appropriately. For example, if you combine tracks 03 and 04 as track 03, track 05 will now be track 04, track 06 will be track 05, etc.

The following diagram shows how combining two tracks joins and renumbers tracks.



5.1.3 MOVE TRACK

To move a track to a different position, pause the track you want to move and enter this sub-menu.

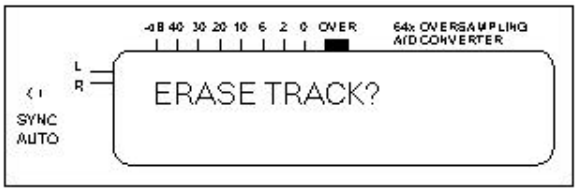


1. At the ***MOVE TRACK?*** Prompt, press **OK/Enter.**
2. The display shows from ***Tr XX -> YY?*** where XX is the track number you want to move. Press the **Down/Up** buttons to select the new track number, as shown by the number toward the right of the display.
3. Press **OK/Enter.** The track shifts to the new position, and other tracks are renumbered to reflect this change.

5.1.4 ERASE TRACK

You can erase the track that is currently paused.
When recording, pressing **Cancel/Display** after the REM display will end recording, and update the Table of Contents.

CAUTION: This function erases the track from your hard drive. Make sure you copy the track to at least one CD if you need to use this data later.



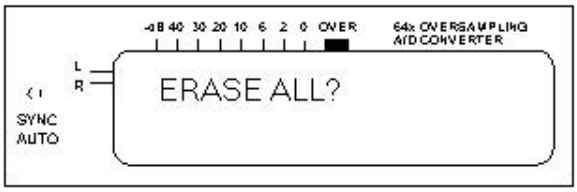
1. At the ***ERASE TRACK?*** screen, press **OK/Enter.**
2. The display will ask ***SURE?*** for confirmation. Press **OK/Enter** to erase the track.

Note: Erase Track will remove the track marker from the HD, so that the track will not be recorded. However, the track's audio data remains on the hard drive. When you want to remove all the tracks from a Block, use the Erase All command (section 5.1.5).

5.1.5 ERASE ALL

You can erase all tracks in the selected HD Block so you can write more data to the Block.

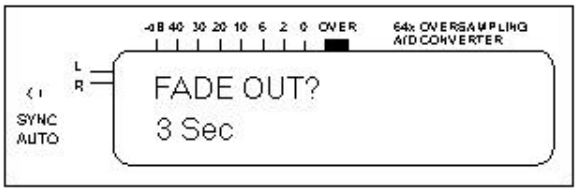
CAUTION: Selecting ***OVERWRITE*** erases all data within that Block. *This data cannot be recovered!* Make sure you copy the Block data to at least one CD if you will need to use this data later. The data in other Blocks remains intact.



1. At the ***ERASE ALL?*** screen, press **OK/Enter**.
2. The display will say ***SURE?*** to confirm that you really want to do this. If so, press **OK/Enter** to erase all tracks in the Block.

5.1.6 FADE OUT

You can fade out any track recorded on HD. The fade time is variable from 1 to 15 seconds.



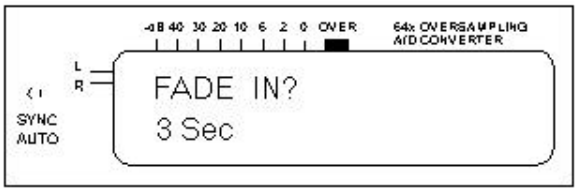
1. Before entering the Edit menu section, use the transport controls to locate the position where the fade out should start.
2. Press **Pause.**

CAUTION: Fades are destructive operations that alter hard disk data. Once you execute a fade, the original audio cannot be recovered.

3. At the ***FADE OUT?*** screen, press **OK/Enter.**
4. The ***FADE OUT : 3Sec?*** default prompt appears.
5. Press the **Up** button to increase the fade time. Press the **Down** button to decrease the fade time.
6. Press **OK/Enter**. The display shows ***TRK XX Editing! >>> ss / SS Sec,*** where XX is the track number being faded out, >>> indicates editing in progress, ss shows the amount of time that has been edited, and SS is the total fade out time.

5.1.7 FADE IN

You can fade in any track recorded on HD. The fade time is variable from 1 to 15 seconds.



1. Before entering the Edit menu section, use the transport controls to locate the position where the fade out should start.
2. Press **Pause.**

CAUTION: Fades are destructive operations that alter hard disk data. Once you execute a fade, the original audio cannot be recovered.

3. At the ***FADE IN?*** screen, press **OK/Enter.**
4. The ***FADE IN : 3Sec?*** default prompt appears.
5. Press the **Up** button to increase the fade time. Press the **Down** button to decrease the fade time.
6. Press **OK/Enter**. The display shows ***TRK XX Editing! >>> ss / SS Sec,*** where XX is the track number being faded in, >>> indicates editing in progress, ss shows the amount of time that has been edited, and SS represents the total fade in time.

Appendix A: UPGRADING THE StartREC 400

The StartREC 400 maintains its operating system (O.S.) in Flash ROM. Reading software from special firmware upgrade CDs into the StartREC 400's internal Flash ROM can update the operating system.

Upgrade notices appear on the manufacturer's web site at http://www.hoei.co.jp. To obtain an update CD, contact your dealer or:

HOEI SANGYO Co., Ltd.
Systems Sales Department
TEL: +81 (3) 3665-3418 FAX: +81 (3) 5642-7559

*CAUTION: Upgrading the O.S. erases **all** data in **all** hard drive blocks! Make sure you save any needed data before upgrading.*

To upgrade the StartREC 400:

1. Press and hold the ***OK/ENTER*** key while turning on power to the StartREC 400.
2. Keep holding the key until the display shows:

```
PROGRAM DISC to
MASTER DRIVE !
```

3. The Master CD tray opens automatically. Insert the manufacturer's firmware update disc.

CAUTION: Use only factory-approved firmware discs. Attempting to upgrade with a non-firmware disc may damage the StartREC 400.

4. Press on the CD tray's ***CLOSE*** button to close the tray.
5. After a few seconds, the StartREC 400 reads the disc and displays the firmware version. If this number is higher than that of your existing firmware, press the ***OK/Enter*** key.
6. The display shows:

```
UPDATE
```

7. After loading the software, the StartREC 400 ejects the firmware disc, and reboots using the new operating system.

Appendix B: TROUBLESHOOTING

B.1 COMMON PROBLEMS AND SOLUTIONS

Symptom	Check Items
StartREC will not power-up	▪ Check for proper connections between the StartREC 400 and AC outlet. ▪ Check power by using the same power cord with a different piece of equipment. ▪ Make sure the power switch is set completely to the On position (not pushed in part way).
Disc-related problems	▪ Check if the disc is inserted correctly in the drive. ▪ Use only quality recordable discs. ▪ If recording at 8X, make sure you are using 8X-compatible discs. ▪ Check if the disc surface has dust, and blow away with compressed air if needed. ▪ Check the disc for condensation. Let it dry thoroughly before attempting to use. ▪ If the unit was moved from low temperature environment to high temperature environment over a short period of time, there maybe condensation on the optical head's lens. Leave the unit powered-up on for a while, then restart it.
All inserted target discs are not copied	▪ Check if the problematic target drive's "busy" LEDs lights up after inserting the target disc. If not, the drive or connection to it may be defective.
The unit does not play Playback volume seems low	▪ Check all audio cabling, and make sure that your monitoring system works properly. ▪ Check that the audio data you want to play is stored in the currently selected Block. • Make sure you're recording at a high enough level. The StartREC 400 playback level is the same as while recording.
The track number does not increment properly	• The recording level may be too high or too low. Check the recording level during REC Pause. With analog sources, check the **Rec Level Control**. With digital sources, press the **Edit/Menu** button and check the digital volume by pressing the **Down/Up** buttons.
The copied disc does not accept additional data.	• Check if the WR TYPE is open (section. ***2.3.6, WR(ITE) TYPE CHANGE).*** Tracks cannot be added to a source taken via Track Extraction if the session has been exited.

B.2 ERROR MESSAGES AND ERROR CODES

The StartREC 400 will notify you of any problems it discovers. These appear as Error Messages or Error Codes in the display. If there is anything wrong with an individual drive, the lowest-numbered drive is displayed, with Error Message/Codes for drives displayed in order.

B.2.1 ERROR MESSAGES

DRIVE NOT READY	The master disc or the target disc has not been inserted yet, or the process was started before the drive detected the disc. Please allow 10-20 seconds before trying to access a disc to allow for detection. If this error occurs consistently, contact tech support.
USER STOP	The user has stopped a process by pressing **Cancel/Display** button.
VERIFY DATA	Verification has shown the copied data is different from the master data.
CAPACITY ERROR	The capacity of the master disc is larger than the capacity of the target media.
R/W ERROR	An error has occurred while reading or writing in HD.
UNKNOWN FORMAT	The master disc format is not supported.
READ ERROR	There has been an error reading the CD in the master drive. This could be caused by dirt on the CD.
NOT PROGRAM DISC	The disc that is loaded is not a firmware disc for upgrading the StartREC 400.
DRIVE NOT FOUND	The StartREC 400 does not recognize the master drive.

B.2.2 ERROR CODES

In addition to Error Messages, there may be error codes for individual drives. The display will show these error codes; the following charts show what each error code means. This information can be very helpful to tech support. If error codes show up consistently, contact your nearest service center.

The error codes use the following display formats, depending on which drive shows the error:

```
MASTER DRIVE
SCSI ERR  XX YY
```

```
TARGET DRIVE #*
SCSI ERR  XX YY
```

```
HDD
SCSI ERR  XX YY
```

In each case, XX is the ASC (Additional Sense Code) and YY is the ASCQ (Additional Sense Code Qualifier). For individual target drives, * represents the drive number.

Example 1: This display indicates the master data reading failed, and there has been an L-EC uncorrectable error.

```
MASTER DRIVE
SCSI ERR  11 05
```

Example 2: This display indicates that writing was stopped because Target Drive 1 had a buffer underrun.

```
TARGET DRIVE #1
SCSI ERR  0C 07
```

B.2.3 MASTER DRIVE ERROR CODES

ASC	ASCQ	Description
00	00	NO ADDITIONAL SENSE INFORMATION
00	14	AUDIO PLAY OPERATION STOPPED DUE TO ERROR
02	00	NO SEEK COMPLETE
02	80	SERVO SEEK ERROR
02	81	SYNC ERROR
02	82	HEADER ERROR
02	83	TARGET NOT MET
04	00	LOGICAL UNIT NOT READY, CAUSE NOT REPORTABLE
04	01	LOGICAL UNIT IS IN PROGRESS OF BECOMING READY (TABLE-OF-CONTENTS READ IN PROGRESS)
08	00	LOGICAL UNIT COMMUNICATION FAILURE
09	01	TRACKING SERVO FAILURE
09	02	FOCUS SERVO FAILURE
09	03	SPINDLE SERVO FAILURE
11	05	L-EC UNCORRECTABLE ERROR (L-EC CODES PRESENT AND L-EC ON)
11	06	CIRC UNRECOVERED ERROR (L-EC UNAVAILABLE OR OFF)
18	03	RECOVERED DATA WITH CIRC
18	04	RECOVERED DATA WITH L-EC
20	00	INVALID COMMAND OPERATION CODE
21	00	LOGICAL BLOCK ADDRESS OUT OF RANGE
24	00	INVALID FIELD IN CDB
25	00	LOGICAL UNIT NOT SUPPORTED
26	00	INVALID FIELD IN PARAMETER LIST
28	00	NOT READY TO READY TRANSITION
29	00	POWER ON, RESET OR BUS DEVICE RESET OCCURRED
2A	01	MODE PARAMETER CHANGED
2C	00	COMMAND SEQUENCE ERROR
39	00	SAVING PARAMETERS NOT SUPPORTED
3A	00	MEDIUM NOT PRESENT
40	00	DIAGNOSTIC FAILURE ON COMPONENT 0 (INTERNAL BUS FAILURE)
44	00	INTERNAL TARGET FAILURE
43	00	MESSAGE ERROR
45	00	SELECT/RESELECT FAILURE
47	00	SCSI PARITY ERROR
48	00	INITIATOR DETECTED ERROR MESSAGE RECEIVED
49	00	INVALID MESSAGE ERROR
4E	00	OVERLAPPED COMMAND ATTEMPTED
53	00	MEDIA LOAD/EJECT FAILED
53	02	MEDIUM REMOVAL PREVENT
57	00	UNABLE TO RECOVER TABLE-OF-CONTENTS
5A	01	OPERATOR MEDIUM REMOVAL REQUEST
63	00	END OF USER AREA ENCOUNTERED ON THIS TRACK
64	00	ILLEGAL MODE FOR THIS TRACK
81	00	LOGICAL UNIT IS RESERVED
85	00	AUDIO ADDRESS NOT VALID
B6	00	MEDIA LOAD MECHANISM FAILED
B9	00	AUDIO PLAY OPERATION ABORTED
BF	00	BUFFER OVERFLOW

B.2.4 TARGET DRIVE ERROR CODES

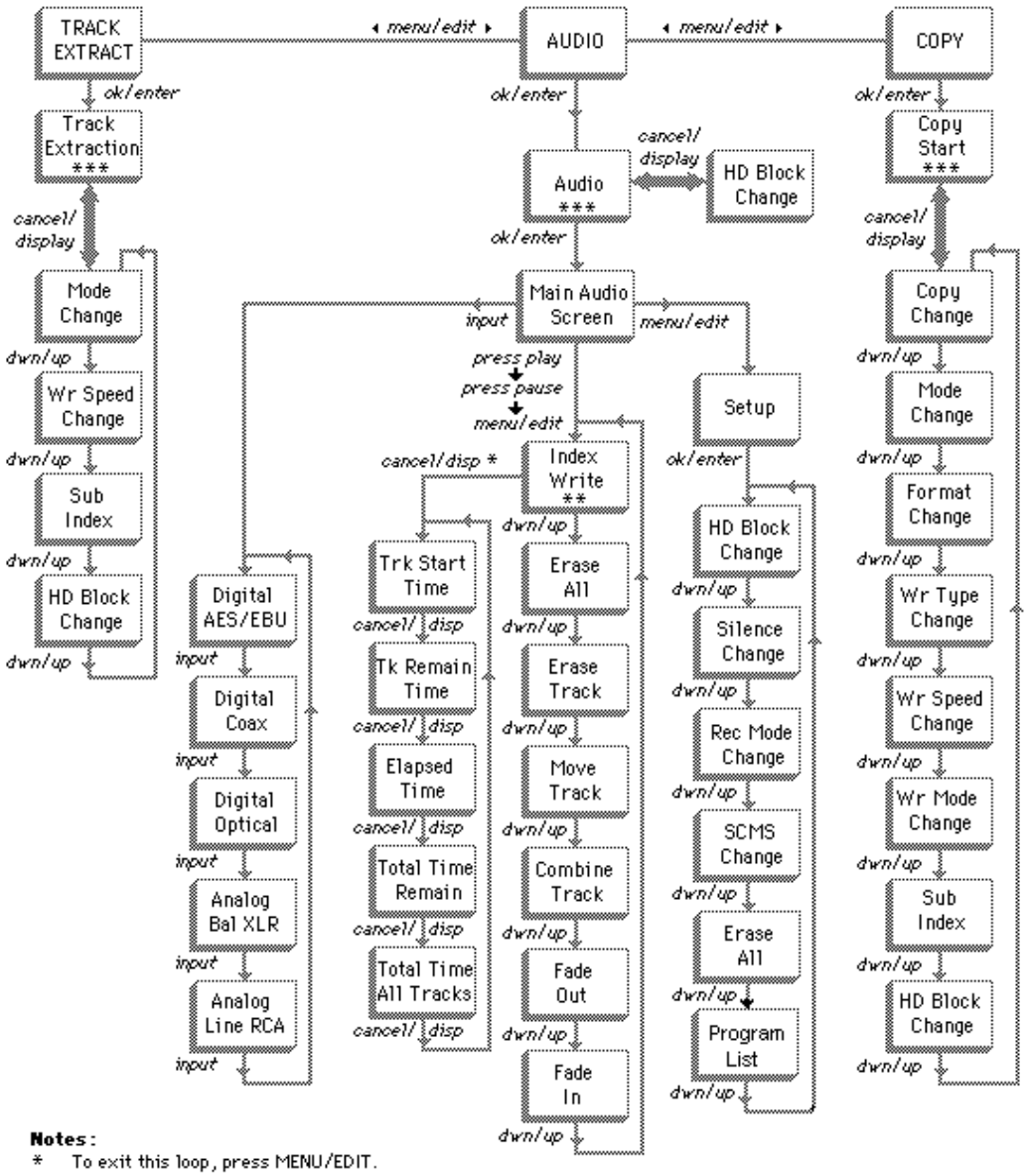
ASC	ASCQ	Description
00	00	NO ADDITIONAL SENSE INFORMATION
00	06	I/O PROCESS TERMINATED
00	11	AUDIO PLAY OPERATION IN PROGRESS
00	17	CLEANING REQUESTED
02	00	NO SEEK COMPLETE
04	00	LOGICAL UNIT NOT READY, CAUSE NOT REPORTABLE
04	01	LOGICAL UNIT IS IN PROCESS OF BECOMING READY
04	02	LOGICAL UNIT NOT READY, INITIALIZING CMD. REQUIRED
04	03	LOGICAL UNIT NOT READY, MANUAL INTERVENTION REQUIRED
04	04	LOGICAL UNIT NOT READY, FORMAT IN PROGRESS
04	07	LOGICAL UNIT NOT READY, OPERATION IN PROGRESS
04	08	LOGICAL UNIT NOT READY, LONG WRITE IN PROGRESS
05	00	LOGICAL UNIT DOES NOT RESPOND TO SELECTION
06	00	NO REFERENCE POSITION FOUND
07	00	MULTIPLE PERIPHERAL DEVICES SELECTED
08	00	LOGICAL UNIT COMMUNICATION FAILURE
08	01	LOGICAL UNIT COMMUNICATION TIME-OUT
08	02	LOGICAL UNIT COMMUNICATION PARITY ERROR
09	00	TRACK FOLLOWING ERROR
09	01	TRACKING SERVO FAILURE
09	02	FOCUS SERVO FAILURE
09	03	SPINDLE SERVO FAILURE
09	04	HEAD SELECT FAULT
0A	00	ERROR LOG OVERFLOW
0B	00	WARNING
0B	01	WARNING - SPECIFIED TEMPERATURE EXCEEDED
0B	02	WARNING - ENCLOSURE DEGRADED
0C	00	WRITE ERROR
0C	07	WRITE ERROR - RECOVERY NEEDED
0C	08	WRITE ERROR - RECOVERY FAILED
0C	09	WRITE ERROR - LOSS OF STREAMING
0C	0A	WRITE ERROR - PADDING BLOCKS ADDED
11	00	UNRECOVERED READ ERROR
11	01	READ RETRIES EXHAUSTED
11	02	ERROR TOO LONG TO CORRECT
11	05	L-EC UNCORRECTABLE ERROR
11	06	CIRC UNRECOVERED ERROR
11	0F	ERROR READING UPC/EAN NUMBER
11	10	ERROR READING ISRC NUMBER
11	11	READ ERROR - LOSS OF STREAMING
15	00	RANDOM POSITIONING ERROR
15	01	MECHANICAL POSITIONING ERROR
15	02	POSITIONING ERROR DETECTED BY READ OF MEDIUM
17	00	RECOVERED DATA WITH NO ERROR CORRECTION APPLIED
17	01	RECOVERED DATA WITH RETRIES
17	02	RECOVERED DATA WITH POSITIVE HEAD OFFSET
17	03	RECOVERED DATA WITH NEGATIVE HEAD OFFSET
17	04	RECOVERED DATA WITH RETRIES AND/OR CIRC APPLIED
17	05	RECOVERED DATA USING PREVIOUS SECTOR ID
17	07	RECOVERED DATA WITHOUT ECC – RECOMMEND REASSIGNMENT
17	08	RECOVERED DATA WITHOUT ECC - RECOMMEND REWRITE
17	09	RECOVERED DATA WITHOUT ECC - DATA REWRITTEN

18	00	RECOVERED DATA WITH ERROR CORRECTION APPLIED
18	01	RECOVERED DATA WITH ERROR CORR. & RETRIES APPLIED
18	02	RECOVERED DATA - DATA AUTO-REALLOCATED
18	03	RECOVERED DATA WITH CIRC
18	04	RECOVERED DATA WITH L-EC
18	05	RECOVERED DATA - RECOMMEND REASSIGNMENT
18	06	RECOVERED DATA - RECOMMEND REWRITE
1A	00	PARAMETER LIST LENGTH ERROR
1B	00	SYNCHRONOUS DATA TRANSFER ERROR
1D	00	MISCOMPARE DURING VERIFY OPERATION
20	00	INVALID COMMAND OPERATION CODE
21	00	LOGICAL BLOCK ADDRESS OUT OF RANGE
21	01	INVALID ELEMENT ADDRESS
24	00	INVALID FIELD IN CDB
25	00	LOGICAL UNIT NOT SUPPORTED
26	00	INVALID FIELD IN PARAMETER LIST
26	01	PARAMETER NOT SUPPORTED
26	02	PARAMETER VALUE INVALID
26	03	THRESHOLD PARAMETERS NOT SUPPORTED
26	04	INVALID RELEASE OF ACTIVE PERSISTENT RESERVATION
27	00	WRITE PROTECTED
27	01	HARDWARE WRITE PROTECTED
27	02	LOGICAL UNIT SOFTWARE WRITE PROTECTED
27	03	ASSOCIATED WRITE PROTECT
27	04	PERSISTENT WRITE PROTECT
27	05	PERMANENT WRITE PROTECT
28	00	NOT READY TO READY CHANGE, MEDIUM MAY HAVE CHANGED
28	01	IMPORT OR EXPORT ELEMENT ACCESSED
29	00	POWER ON, RESET, OR BUS DEVICE RESET OCCURRED
29	01	POWER ON OCCURRED
29	02	SCSI BUS RESET OCCURRED
29	03	BUS DEVICE RESET FUNCTION OCCURRED
29	04	DEVICE INTERNAL RESET
2A	00	PARAMETERS CHANGED
2A	01	MODE PARAMETERS CHANGED
2A	02	LOG PARAMETERS CHANGED
2A	03	RESERVATIONS PREEMPTED
2B	00	COPY CANNOT EXECUTE SINCE HOST CANNOT DISCONNECT
2C	00	COMMAND SEQUENCE ERROR
2C	03	CURRENT PROGRAM AREA IS NOT EMPTY
2C	04	CURRENT PROGRAM AREA IS EMPTY
2F	00	COMMANDS CLEARED BY ANOTHER INITIATOR
30	00	INCOMPATIBLE MEDIUM INSTALLED
30	01	CANNOT READ MEDIUM- UNKNOWN FORMAT
30	02	CANNOT READ MEDIUM- INCOMPATIBLE FORMAT
30	03	CLEANING CARTRIDGE INSTALLED
30	04	CANNOT WRITE MEDIUM- UNKNOWN FORMAT
30	05	CANNOT WRITE MEDIUM- INCOMPATIBLE FORMAT
30	06	CANNOT FORMAT MEDIUM- INCOMPATIBLE MEDIUM
30	07	CLEANING FAILURE
30	08	CANNOT WRITE - APPLICATION CODE MISMATCH
30	09	CURRENT SESSION NOT FIXATED FOR APPEND
31	00	MEDIUM FORMAT CORRUPTED
31	01	FORMAT COMMAND FAILED
34	00	ENCLOSURE FAILURE
35	00	ENCLOSURE SERVICES FAILURE

35	01	UNSUPPORTED ENCLOSURE FUNCTION
35	02	ENCLOSURE SERVICES UNAVAILABLE
35	03	ENCLOSURE SERVICES TRANSFER FAILURE
35	04	ENCLOSURE SERVICES TRANSFER REFUSED
37	00	ROUNDED PARAMETER
39	00	SAVING PARAMETERS NOT SUPPORTED
3A	00	MEDIUM NOT PRESENT
3A	01	MEDIUM NOT PRESENT - TRAY CLOSED
3A	02	MEDIUM NOT PRESENT - TRAY OPEN
3B	0D	MEDIUM DESTINATION ELEMENT FULL
3B	0E	MEDIUM SOURCE ELEMENT EMPTY
3B	0F	END OF MEDIUM REACHED
3B	11	MEDIUM MAGAZINE NOT ACCESSIBLE
3B	12	MEDIUM MAGAZINE REMOVED
3B	13	MEDIUM MAGAZINE INSERTED
3B	14	MEDIUM MAGAZINE LOCKED
3B	15	MEDIUM MAGAZINE UNLOCKED
3D	00	INVALID BITS IN IDENTIFY MESSAGE
3E	00	LOGICAL UNIT HAS NOT SELF -CONFIGURED YET
3E	01	LOGICAL UNIT FAILURE
3E	02	TIMEOUT ON LOGICAL UNIT
3F	00	TARGET OPERATING CONDITIONS HAVE CHANGED
3F	01	MICROCODE HAS BEEN CHANGED
3F	02	CHANGED OPERATING DEFINITION
3F	03	INQUIRY DATA HAS CHANGED
40	NN	DIAGNOSTIC FAILURE ON COMPONENT NN (80H-FFH)
43	00	MESSAGE ERROR
44	00	INTERNAL TARGET FAILURE
45	00	SELECT OR RESELECT FAILURE
46	00	UNSUCCESSFUL SOFT RESET
47	00	SCSI PARITY ERROR
48	00	INITIATOR DETECTED ERROR MESSAGE RECEIVED
49	00	INVALID MESSAGE ERROR
4A	00	COMMAND PHASE ERROR
4B	00	DATA PHASE ERROR
4C	00	LOGICAL UNIT FAILED SELF-CONFIGURATION
4D	NN	TAGGED OVERLAPPED COMMANDS (NN = QUEUE TAG)
4E	00	OVERLAPPED COMMANDS ATTEMPTED
51	00	ERASE FAILURE
53	00	MEDIA LOAD OR EJECT FAILED
53	02	MEDIUM REMOVAL PREVENTED
57	00	UNABLE TO RECOVER TABLE-OF-CONTENTS
5A	00	OPERATOR REQUEST OR STATE CHANGE INPUT
5A	01	OPERATOR MEDIUM REMOVAL REQUEST
5A	02	OPERATOR SELECTED WRITE PROTECT
5A	03	OPERATOR SELECTED WRITE PERMIT
5B	00	LOG EXCEPTION
5B	01	THRESHOLD CONDITION MET
5B	02	LOG COUNTER AT MAXIMUM
5B	03	LOG LIST CODES EXHAUSTED
5D	00	FAILURE PREDICTION THRESHOLD EXCEEDED
5D	FF	FAILURE PREDICTION THRESHOLD EXCEEDED (FALSE)
5E	00	LOW POWER CONDITION ON
5E	01	IDLE CONDITION ACTIVATED BY TIMER
5E	02	STANDBY CONDITION ACTIVATED BY TIMER
5E	03	IDLE CONDITION ACTIVATED BY COMMAND

5E	04	STANDBY CONDITION ACTIVATED BY COMMAND
63	00	END OF USER AREA ENCOUNTERED ON THIS TRACK
63	01	PACKET DOES NOT FIT IN AVAILABLE SPACE
64	00	ILLEGAL MODE FOR THIS TRACK
64	01	INVALID PACKET SIZE
65	00	VOLTAGE FAULT
72	00	SESSION FIXATION ERROR
72	01	SESSION FIXATION ERROR WRITING LEAD-IN
72	02	SESSION FIXATION ERROR WRITING LEAD-OUT
72	03	SESSION FIXATION ERROR - INCOMPLETE TRACK IN SESSION
72	04	EMPTY OR PARTIALLY WRITTEN RESERVED TRACK
73	00	CD CONTROL ERROR
73	01	POWER CALIBRATION AREA ALMOST FULL
73	02	POWER CALIBRATION AREA IS FULL
73	03	POWER CALIBRATION AREA ERROR
73	04	PROGRAM MEMORY AREA UPDATE FAILURE
73	05	PROGRAM MEMORY AREA IS FULL

OPERATIONAL FLOW CHART



Notes:

* To exit this loop, press MENU/EDIT.

** To exit Index Write, press cancel, stop the transport, and press MENU/EDIT twice.

*** To exit back to the top level, press CANCEL repeatedly to arrive at this block, then press MENU/EDIT.

StartREC 400 Flow Chart

button presses are shown in italics